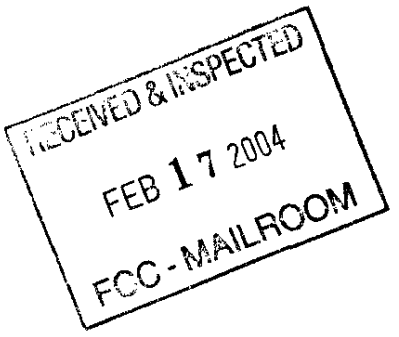
DOCKET FILE COPY ORIGINAL

February 12, 2004

Ms. Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th St. S.W.
Washington DC 20554



Re: MM Docket 86-440

Dear Ms. Dortch:

I, Sid Shumate, owner of a residence located at 432 Moseley Drive, in Charlottesville, Virginia, and owner of the Givens & Bell division of Blue Ridge Video Services, hereby submit the enclosed Informal Objection to the grant of BMPCT-20031219AAK.

I certify that I am mailing or hand-carrying true copies to the following interested parties:

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List A B C D E

Sidney E. Shumate
Principal Owner, Givens & Bell Division of Blue Ridge Video Services
1897 Ridge Road, Haymarket VA 20169

Before the

Federal Communications Commission
Washington, D.C. 20554

In re Applications and Amendments of	)	MM DOCKET NO. 86-440
	)	
Charlottesville Broadcasting Corporation	)	File No. BMPCT-20031219AAK
	)	
For Modification of Construction Permit	)	File No. BMPCT-20030407AAM
For A New TV Station on Channel 19	)	
At Charlottesville, Virginia	)	File No. BPCT-19860410KP

February 12, 2004

Ms. Ms. Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th St. S.W.
Washington DC 20554

Re: MM Docket 86-440, and application and amendment BMPCT-20031219AAK

Dear Ms. Dortch:

The following comments are being filed with the Federal Communications Commission (the Commission) as a "informal objection" as per Commission Rules and Regulations Section 73. 3587. I submit this informal objection in reply to the "CBC Response to Informal Objection of Sidney E. Shumate" (Response) that was filed by the Charlottesville Broadcasting Corp.(CBC), dated February 10, 2004, and submitted with respect to the CBC's Modification of Construction Permit Application (Application), File number BMPCT-20031219AAK.

I wish to reply and comment with regard to 6 items, including errors in fact and in procedure, in the Response and its accompanying Engineering Statement. I will comment on these corrections, as far as is practical, following in the order of CBC's comments regarding my objection.

In Reply to the Letter of Response:

Item 1:

On page 2 of the Response, CBC incorrectly states that I object to the Application on the basis that CBC's proposed side mounted antenna would not properly protect the National Radio Astronomy Observatory.

In fact, I object to the fact that adequate technical documentation is not provided in the application nor in Exhibit 30, the Engineering Statement, to allow an qualified independent third party, such as myself, or the engineering staff at the Commission, to determine, either by computer simulation or by the now-offered factory model test, whether or not that the proposed modification would, in fact, adequately protect the NRAO. Nor does is provide full documentation of the now-offered yet-to-be-performed factory model test. There would be little incentive to complete these tests, nor an opportunity to object to the lack of such a test, nor would it be likely that CBC would

offer the opportunity to review and comment on the results of such a test, once the Application is granted.

The engineers at the NRAO, while highly qualified in their specialties, are not necessarily specialists in television broadcast antenna design, nor are they known by me to be experienced in the construction and operation of television broadcast facilities. Their determination, as noted in Denise Wirt's letter of January 26, appears to rely completely on the information provided in the Application, and, therefore, on CBC's calculation that an actual 14.4 kW ERP would be transmitted toward the first mountaintop diffraction point in the direction of the most sensitive antenna at the NRAO observatory at Green Bank, WV.

Item 2:

In the Conclusion to the Response letter, Ms. Polivy again attempts to rush the Commission by noting the shortness of the remaining time left to construct. In response, I note that the CBC has repeatedly modified, in order to perfect, its application over the past 20 years, and was given an extraordinarily long time to prepare and submit the existing construction permit application, which was granted by direct action of the Commission, bypassing the normal engineering review process. In addition, CBC has, late in the allotted construction period, submitted no less than two unacceptable construction permit modification applications, the latest of which was originally submitted more that 2 years after the grant of the existing construction permit. The

Commission, therefore, has been offered no compelling reason to give CBC any special consideration in this matter, and, if it does not reject this application outright, should process this application only after a thorough and painstaking review of the relevant engineering issues.

In reply to the Engineering Statement accompanying the Letter of Response:

Item 3:

On page 2, under Shumate Objections – Analysis Mr. Beverage incorrectly assumes, and states as a fact, that: "SES did not obtain manufacturing data for the antenna system proposed by CBC or any of the other antenna systems for which he undertook calculations."

In fact, as Director of Engineering for WVIR-TV from 1979 to 1995, I was the engineer who performed the initial RF exposure calculations for the WVIR-TV transmitter site, and the subsequent calculations and certification for the upgrade application when WVIR-TV applied to construct it's existing, current facilities. The horizontal and vertical antenna patterns for the current WVIR-TV antenna, which I have studied and measured extensively with regard to RF pattern and beam steering effects, are in my files, as are the specifications for the current WHTJ antenna, supplied to me by Richard Bogner well over a decade ago. The vertical and horizontal patterns for the proposed CBC antenna are in the Application and it's Engineering Statement, so I did not need to obtain them. And

sample patterns for the WHTJ-DT and WVIR-DT antennas are available in my catalog library, and available using Dielectric's E-Z File™ Antenna Filing Data software.

In fact, it appears that Mr. Beverage did not have the actual WVIR-TV analog antenna vertical pattern, as his report refers to the FCC database designation for the antenna, not the Dielectric TFU-series designator for this antenna's specially customized (in order to protect the NRAO) vertical pattern.

With reference to the horizontal patterns, the proposed main beam of the Application is in the general direction of the WVIR-TV transmitter site. And the WVIR-TV antenna is omnidirectional. So for all practical purposes, they are in each other's main horizontal beam.

My choice of method is in compliance with the methods made available in OET Bulletin 65. My choice to use a simplified set of factors for "F" reflects two facts; (1) It was not my intent to do CBC's full RFR calculation analysis, only to show that is is absolutely necessary for CBC to do it, and (2) to take into account the possible reflections of RF energy off of the antenna mounting and tower lattice structure that can occur with side-mounted antennas. Reflections don't just occur in the horizontal plane. The complex lattice structure of the WVIR-TV and WHTJ Rohn Model 90 towers (and in the case of the WVIR-TV tower, the massive, 15-inch wide, high-power Dielectric DTW waveguide mounted in the center of the tower) can cause reflections in all directions, and with multiple polarities that can add together to create peak "hot spots". Therefore, my choice

of a higher "F" factor for the side-mounted antennas than that used for the top-mounted WVIR-TV and WHTJ antennas, reflects this.

To provide a real-world, and topical comparison of how reflections from nearby tower structures can affect the RF energy level arriving at ground level, I refer to the example of the recent, well known, measurements taken by the Commission on the driveway on the north side of the Mt. Wilson Post Office, at Mount Wilson, CA. Three FM radio stations, and KWHY-TV, were issued a Notice of Apparent Liability for Forfeiture (FCC 03-258) on October 20, 2003, when, upon inspection, the Commission found, on July 11, 2002, RF levels exceeding the Commission's public MPE limits at ground level. The Commission subsequently determined, by actual measurement, that KWHY-TV was producing a power density level that was 10.5% of the MPE limit for its particular transmitter (a power density, or "S", of 0.036 mW/cm^2) to the total RFR in the area identified as exceeding the public RFR MPE limits.

KWHY-TV is licensed to operate with a maximum ERP of 2,630 kW, on Channel 22. The KWHY-TV analog antenna is an Andrew Trasar, a top mount, UHF slotted transmission line design, mounted atop a 46.0 meter tall tower, ASRN 1036897, with a RCAGL of 55 meters. Utilizing Andrew Powertools™ software to duplicate the design of the KWHY-TV antenna, it appears to be equivalent to a model ATW25H3-HTC3-22H directional antenna with a special order, modified cardioid, horizontal pattern. The standard vertical pattern for this antenna is attached as Figure 1.

Utilizing formula 2 of Section 3, Supplement A to the OET Bulletin 65, and solving for "S" using the methodology utilized by CBC, i.e., by considering only the published antenna pattern, we calculate "S" to be:

$$S = \frac{(33.4) * (F^2) * (.4\ ERPv + ERPa)}{(R^2)}$$

Where:

ERPv = 2,630,000 watts

ERPa = 263,000 watts (assuming 10% aural)

R = 60.6 meters (the distance from the KWHY-TV antenna RC to a point 2 meters above ground at the measurement point stated in FCC 03-258)

The look-down angle for this measurement point, from the KWHY-TV antenna radiation center (RC), is – 59 degrees. From Figure 1, the Andrew ATW25H3H vertical antenna pattern, we can see that the Relative Field factor, F, ranges from a high of .037 to a low of 0.010 within a range of plus and minus 2.5 degrees from –59 degrees.

Therefore, for a F of .037, the maximum predicted "S", using CBC's chosen OET Bulletin 65 methodology, is:

$$S = \frac{(33.4) * (.037^2) * (.4* 2{,}630{,}000 + 263{,}000)}{(60.6^2)} = 16.4 \text{ uW/sq. cm.}$$

We divide uW by 1000 to obtain mW; so 16.4 uW/sq. cm. is equal to .0164 uW/sq. cm. This is the maximum calculated "S" at the measurement point on the driveway adjacent to the Mt. Wilson Post Office that should have been obtained by measurement as predicted using the methodology utilized by CBC in their engineering report. It is less

than half of that which was measured by the Commission. If we also determine the minimum, based upon an "F" of 0.01, we obtain an "S" of 1.2 uW/sq. cm., or .0012 mW/sq. cm.

Therefore, the Commission, while measuring the RFR level along a 100-foot long section of the Mt. Wilson driveway, by calculation, should have obtained readings for KWHY-TV ranging from a high of .0164 mW/sq. cm, down to a low of .0012 mW/sq. cm, that is, from 46% down to 3%, of the actual RFR level measured.

If we reverse this calculation, and determine the "F" resulting from a "S" of .036 mW/sq. cm at the KWHY-TV site, we obtain a result of "F" = 0.055 .

What accounts for this difference? The KWHY-TV tower is adjacent to several taller towers, most notably the KMEX-TV tower, ASRN 1215107, and the KFTR-TV tower, ASRN 1232157; these towers are so close to the KWHY-TV tower that they share the same co-ordinates, when rounded off to the nearest second, in the FCC database. The KWHY-TV signal reflects off of these towers, scattering the signal in all directions, including toward the ground. The effect is similar to that found when the peak vertical pattern beam of a side-mounted, full power UHF antenna reflects off of the antenna's mounting brackets, and supporting tower structure.

CBC's calculations of the RF level do not account for these reflections, only for the RF leaving the antenna according to the antenna's vertical and horizontal pattern. The

methodology utilized by CBC, therefore, provides only for the lowest possible predicted RF level, and is a valid calculation only for UHF television antennas when they are top mounted on a tower, and not adjacent to any nearby structures capable of creating reflections. This is an inconsistency in in CBC's methodology. By comparison, CBC, when prompted by my objection, did show that it took, and plans to take, steps to account for the effect of tower structure reflections on the signal strength sent toward the NRAO Green Bank installation.

The calculation methodology in OET-65 is intended to predict the total RFR level, with a conservative margin to accommodate "hot spots" of RF concentration and exposure. Therefore, while my methodology is simplified by comparison to that of CBC, I show and state that it is perfectly acceptable within the methodology specified in OET-65, and when all relevant factors are taken in consideration, and with respect to the intent of the methodology in OET-65, it is a more conservative, perhaps even more accurate, and therefore a more acceptable, determination in this case. Therefore, my determination is solid, and I represent to the Commission that an Environmental Assessment is necessary.

Item 4.

CBC's protest on page 3, paragraph 2 is premature. The existing construction permit holders for WVIR-DT and WHTJ-DT have previously satisfied the Commission with regard to a showing of calculated compliance with OET Bulletin 65 RF exposure requirements in order to obtain their DTV construction permits. The Commission stated, in FCC 03-258, paragraph 4, that:

> " Broadcast stations that filed applications after October 15, 1997, for an initial construction permit, license, renewal or modification of an existing license were required to demonstrate compliance with the new RFT MPE limits, or to file an Environmental Assessment and undergo environmental review by Commission Staff."

Therefore, it is now up to CBC to prove compliance, or undergo an Environmental Assessment and staff review, in order to obtain a modification of their construction permit to relocate to this tower.

Item 5:

In the CBC RFR Calculations section, Paragraph 3 of Page 5 starts by saying: "A sample calculation for the proposed CBC facilities for a point 6' above the WTJU tower base follows:" WTJU's tower is .14 kilometer to the south of the Application co-ordinates (as shown on page 6).

The CBC states that I do not take into consideration the actual vertical pattern of the antenna. However, their example equation is carefully chosen. The tower that supports WTJU, WVTW, and WNRN, is south (bearing 182 degrees) of the WHTJ tower, which places its base at a ground level only slightly above that of the WHTJ tower, at a point adjacent to the right of way, but where the ridgetop of the mountain dips. At this distance and angle, the F taken from the CBC antenna vertical pattern is, in fact, equal to 0.1.

But this is not in the main direction of concern. Toward the east, also toward the right of way traversing the peak in the ridge of Carter's Mountain, (within the main beam of the CBC horizontal pattern) along which are located the base of the WVIR-TV tower, W64AO's tower base (also the headend for Adelphia Cable), the tower bases for WUVA, WWWV, WUMX, and the cell and wireless cable towers, the depression angle at 2 meters above ground is in the 6.0 to 6.4 degree range. At this angle, the F from the vertical pattern of the CBC antenna ranges from .2 up to .25, from the antenna pattern alone, not including any reflections from the antenna mounting structure and the towers. Therefore, my use of an F =.2 for the proposed CBC antenna is, in fact, extremely conservative.

Item 6

The distance units used for R in the example on page 5 are in meters, the correct, acceptable units for distance in a submission before the Commission. The Excel worksheet calculation charts at the end of the Engineering Statement, however, are curiously not in compliance with FCC rules, 47CFR1.19, requiring the sole use of metric units for all submissions before the Commission. The RF power density calculation charts state distances only in feet, not meters. Therefore, the CBC Engineering Exhibit cannot be accepted for consideration by the Commission. Until Mr. Beverage prepares and submits an additional, corrective, metric-based exhibit in this case, the Commission should continue to rely solely on my calculations in Engineering Exhibit I, attached to my objection.

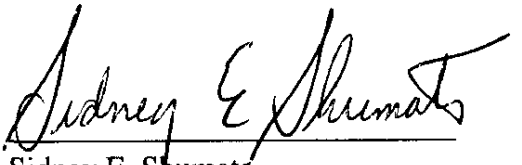
Conclusion

Therefore, for (1) the benefit of those who maintain facilities on Carter's Mountain, those who work in the surrounding Orchard, and for the general public who may visit and pass by, as well as (2) in order to ensure proper protection of the NRAO, I ask the Commission to reject the CBC's New Application.

And again, due to the exceptional circumstances under which the existing construction permit was granted, I also recommend to the Commission that they amend their existing Memorandum Opinion and Order, FCC 00-149, to clearly and specifically state that no new applications for modification of the existing CBC construction permit will be accepted for filing that do not provide a full and adequate showing of compliance with the provisions of the existing protection agreement with the NRAO.

In order to provide full disclosure, I state that I am also the principal owner of Blue Ridge Video Services, and the Givens & Bell division of Blue Ridge Video Services. Givens & Bell has previously applied to construct a Ch. 64 television station in Charlottesville, and has previously submitted comments and petitions in proceeding 86-440.

Sincerely yours,



Sidney E. Shumate

ANDREW®

ELEVATION PATTERN

Type:	ATW25H3H	
Directivity:	Numeric	dBd
Main Lobe:	25.00	13.98
Horizontal:	16.85	12.27
Beam Tilt:	0.75	
Polarization:	Horizontal	
Channel:	22	
Location:		
Note:	Figure 1.